

SEQUENCE LISTING

<110> Luche, Ralf M.
Wei, Bo

<120> DSP-15 DUAL-SPECIFICITY PHOSPHATASE

<130> 200125.433

<140> US

<141> 2001-09-18

<160> 27

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 1980

<212> DNA

<213> Homo sapiens

<400> 1

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cggcctcccc	ggetccgcta	cctgctggta	gtttctacac	gagaaggaga	aggtctgagc	420
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cagtcaagtg	ttaccctcca	gggcagtgcc	gtggtggcca	accggaccca	ggccttccag	1860
gagcaggagc	aggggcaggg	gcaggggcag	ggagagccct	gcatttcctc	tacgcccagg	1920
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<210> 2
 <211> 659
 <212> PRT
 <213> Homo sapiens

<400> 2

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		20						25					30		
Gln	Arg	Arg	Gln	Ser	Phe	Ala	Val	Leu	Arg	Gly	Ala	Val	Leu	Gly	Leu
		35					40					45			
Gln	Asp	Gly	Gly	Asp	Asn	Asp	Asp	Ala	Ala	Glu	Ala	Ser	Ser	Glu	Pro
	50				55					60					
Thr	Glu	Lys	Ala	Pro	Ser	Glu	Glu	Glu	Leu	His	Gly	Asp	Gln	Thr	Asp
65					70					75				80	
Phe	Gly	Gln	Gly	Ser	Gln	Ser	Pro	Gln	Lys	Gln	Glu	Glu	Gln	Arg	Gln
				85				90						95	
His	Leu	His	Leu	Met	Val	Gln	Leu	Leu	Arg	Pro	Gln	Asp	Asp	Ile	Arg
			100					105					110		
Leu	Ala	Ala	Gln	Leu	Glu	Ala	Pro	Arg	Pro	Pro	Arg	Leu	Arg	Tyr	Leu
		115					120					125			
Leu	Val	Val	Ser	Thr	Arg	Glu	Gly	Glu	Gly	Leu	Ser	Gln	Asp	Glu	Thr
	130					135						140			
Val	Leu	Leu	Gly	Val	Asp	Phe	Pro	Asp	Ser	Ser	Ser	Pro	Ser	Cys	Thr
145					150					155					160
Leu	Gly	Leu	Val	Leu	Pro	Leu	Trp	Ser	Asp	Thr	Gln	Val	Tyr	Leu	Asp
				165					170					175	
Gly	Asp	Gly	Gly	Phe	Ser	Val	Thr	Ser	Gly	Gly	Gln	Ser	Arg	Ile	Phe
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Lys	Pro	Ile	Ser	Ile	Gln	Thr	Met	Trp	Ala	Thr	Leu	Gln	Val	Leu	His
		195					200						205		
Gln	Ala	Cys	Glu	Ala	Ala	Leu	Gly	Ser	Gly	Leu	Val	Pro	Gly	Gly	Ser
		210				215						220			
Ala	Leu	Thr	Trp	Ala	Ser	His	Tyr	Gln	Glu	Arg	Leu	Asn	Ser	Glu	Gln
225					230					235					240
Ser	Cys	Leu	Asn	Glu	Trp	Thr	Ala	Met	Ala	Asp	Leu	Glu	Ser	Leu	Arg
			245						250					255	
Pro	Pro	Ser	Ala	Glu	Pro	Gly	Gly	Ser	Ser	Glu	Gln	Glu	Gln	Met	Glu
			260					265						270	
Gln	Ala	Ile	Arg	Ala	Glu	Leu	Trp	Lys	Val	Leu	Asp	Val	Ser	Asp	Leu
		275					280					285			
Glu	Ser	Val	Thr	Ser	Lys	Glu	Ile	Arg	Gln	Ala	Leu	Glu	Leu	Arg	Leu
	290					295					300				
Gly	Leu	Pro	Leu	Gln	Gln	Tyr	Arg	Asp	Phe	Ile	Asp	Asn	Gln	Met	Leu
305					310					315					320
Leu	Leu	Val	Ala	Gln	Arg	Asp	Arg	Ala	Ser	Arg	Ile	Phe	Pro	His	Leu
			325						330					335	
Tyr	Leu	Gly	Ser	Glu	Trp	Asn	Ala	Ala	Asn	Leu	Glu	Glu	Leu	Gln	Arg
			340				345						350		
Asn	Arg	Val	Thr	His	Ile	Leu	Asn	Met	Ala	Arg	Glu	Ile	Asp	Asn	Phe
		355				360						365			
Tyr	Pro	Glu	Arg	Phe	Thr	Tyr	His	Asn	Val	Arg	Leu	Trp	Asp	Glu	Glu
	370					375					380				
Ser	Ala	Gln	Leu	Leu	Pro	His	Trp	Lys	Glu	Thr	His	Arg	Phe	Ile	Glu

385 390 395 400
 Ala Ala Arg Ala Gln Gly Thr His Val Leu Val His Cys Lys Met Gly
 405 410 415
 Val Ser Arg Ser Ala Ala Thr Val Leu Ala Tyr Ala Met Lys Gln Tyr
 420 425 430
 Glu Cys Ser Leu Glu Gln Ala Leu Arg His Val Gln Glu Leu Arg Pro
 435 440 445
 Ile Ala Arg Pro Asn Pro Gly Phe Leu Arg Gln Leu Gln Ile Tyr Gln
 450 455 460
 Gly Ile Leu Thr Ala Ser Arg Gln Ser His Val Trp Glu Gln Lys Val
 465 470 475 480
 Gly Gly Val Ser Pro Glu Glu His Pro Ala Pro Glu Val Ser Thr Pro
 485 490 495
 Phe Pro Pro Leu Pro Pro Glu Pro Glu Gly Gly Glu Glu Lys Val
 500 505 510
 Val Gly Met Glu Glu Ser Gln Ala Ala Pro Lys Glu Glu Pro Gly Pro
 515 520 525
 Arg Pro Arg Ile Asn Leu Arg Gly Val Met Arg Ser Ile Ser Leu Leu
 530 535 540
 Glu Pro Ser Leu Glu Leu Glu Ser Thr Ser Glu Thr Ser Asp Met Pro
 545 550 555 560
 Glu Val Phe Ser Ser His Glu Ser Ser His Glu Glu Pro Leu Gln Pro
 565 570 575
 Phe Pro Gln Leu Ala Arg Thr Lys Gly Gly Gln Gln Val Asp Arg Gly
 580 585 590
 Pro Gln Pro Ala Leu Lys Ser Arg Gln Ser Val Val Thr Leu Gln Gly
 595 600 605
 Ser Ala Val Val Ala Asn Arg Thr Gln Ala Phe Gln Glu Gln Glu Gln
 610 615 620
 Gly Gln Gly Gln Gly Gln Gly Glu Pro Cys Ile Ser Ser Thr Pro Arg
 625 630 635 640
 Phe Arg Lys Val Val Arg Gln Ala Ser Val His Asp Ser Gly Glu Glu
 645 650 655
 Gly Glu Ala

<210> 3
 <211> 156
 <212> PRT
 <213> Homo sapiens

<400> 3
 Asp Gly Ser Pro Leu Ser Asn Ser Gln Pro Ser Phe Pro Val Glu Ile
 1 5 10 15
 Leu Pro Phe Leu Tyr Leu Gly Cys Ala Lys Asp Ser Thr Asn Leu Asp
 20 25 30
 Val Leu Glu Glu Phe Gly Ile Lys Tyr Ile Leu Asn Val Thr Pro Asn
 35 40 45
 Leu Pro Asn Leu Phe Glu Asn Ala Gly Glu Phe Lys Tyr Lys Gln Ile
 50 55 60
 Pro Ile Ser Asp His Trp Ser Gln Asn Leu Ser Gln Phe Phe Pro Glu
 65 70 75 80
 Ala Ile Ser Phe Ile Asp Glu Ala Arg Gly Lys Asn Cys Gly Val Leu
 85 90 95
 Val His Cys Leu Ala Gly Ile Ser Arg Ser Val Thr Val Thr Val Ala
 100 105 110

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Tyr Leu Met Gln Lys Leu Asn Leu Ser Met Asn Asp Ala Tyr Asp Ile
    115                      120                      125
Val Lys Met Lys Lys Ser Asn Ile Ser Pro Asn Phe Asn Phe Met Gly
    130                      135                      140
Gln Leu Leu Asp Phe Glu Arg Thr Leu Gly Leu Ser
    145                      150                      155

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<210> 4
<211> 156
<212> PRT
<213> Homo sapiens

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<400> 4
Asp Gly Ser Pro Val Pro Ser Ser Gln Pro Ala Phe Pro Val Gln Ile
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Leu Pro Tyr Leu Tyr Leu Gly Cys Ala Lys Asp Ser Thr Asn Leu Asp
    20                      25                      30
Val Leu Gly Lys Tyr Gly Ile Lys Tyr Ile Leu Asn Val Thr Pro Asn
    35                      40                      45
Leu Pro Asn Ala Phe Glu His Gly Gly Glu Phe Thr Tyr Lys Gln Ile
    50                      55                      60
Pro Ile Ser Asp His Trp Ser Gln Asn Leu Ser Gln Phe Phe Pro Glu
    65                      70                      75                      80
Ala Ile Ser Phe Ile Asp Glu Ala Arg Ser Lys Lys Cys Gly Val Leu
    85                      90                      95
Val His Cys Leu Ala Gly Ile Ser Arg Ser Val Thr Val Thr Val Ala
    100                     105                     110
Tyr Leu Met Gln Lys Met Asn Leu Ser Leu Asn Asp Ala Tyr Asp Phe
    115                      120                      125
Val Lys Arg Lys Lys Ser Asn Ile Ser Pro Asn Phe Asn Phe Met Gly
    130                      135                      140
Gln Leu Leu Asp Phe Glu Arg Thr Leu Gly Leu Ser
    145                      150                      155

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<210> 5
<211> 156
<212> PRT
<213> Homo sapiens

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<400> 5
Ala Thr Pro Pro Pro Val Gly Leu Arg Ala Ser Phe Pro Val Gln Ile
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Leu Pro Asn Leu Tyr Leu Gly Ser Ala Arg Asp Ser Ala Asn Leu Glu
    20                      25                      30
Ser Leu Ala Lys Leu Gly Ile Arg Tyr Ile Leu Asn Val Thr Pro Asn
    35                      40                      45
Leu Pro Asn Phe Phe Glu Lys Asn Gly Asp Phe His Tyr Lys Gln Ile
    50                      55                      60
Pro Ile Ser Asp His Trp Ser Gln Asn Leu Ser Arg Phe Phe Pro Glu
    65                      70                      75                      80
Ala Ile Glu Phe Ile Asp Glu Ala Leu Ser Gln Asn Cys Gly Val Leu
    85                      90                      95
Val His Cys Leu Ala Gly Val Ser Arg Ser Val Thr Val Thr Val Ala
    100                     105                     110
Tyr Leu Met Gln Lys Leu His Leu Ser Leu Asn Asp Ala Tyr Asp Leu

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		115					120				125				
Val	Lys	Arg	Lys	Lys	Ser	Asn	Ile	Ser	Pro	Asn	Phe	Asn	Phe	Met	Gly
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145					150					155					

<210> 6
 <211> 155
 <212> PRT
 <213> Homo sapiens

<400> 6															
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1				5					10					15	
Leu	Pro	His	Leu	Tyr	Leu	Gly	Ser	Gln	Lys	Asp	Val	Leu	Asn	Lys	Asp
			20					25					30		
Leu	Met	Thr	Gln	Asn	Gly	Ile	Ser	Tyr	Val	Leu	Asn	Ala	Ser	Asn	Ser
		35					40					45			
Cys	Pro	Lys	Pro	Asp	Phe	Ile	Cys	Glu	Ser	Arg	Phe	Met	Arg	Val	Pro
	50					55					60				
Ile	Asn	Asp	Asn	Tyr	Cys	Glu	Lys	Leu	Leu	Pro	Trp	Leu	Asp	Lys	Ser
65					70					75				80	
Ile	Glu	Phe	Ile	Asp	Lys	Ala	Lys	Leu	Ser	Ser	Cys	Gln	Val	Ile	Val
			85					90					95		
His	Cys	Leu	Ala	Gly	Ile	Ser	Arg	Ser	Ala	Thr	Ile	Ala	Ile	Ala	Tyr
			100					105					110		
Ile	Met	Lys	Thr	Met	Gly	Met	Ser	Ser	Asp	Asp	Ala	Tyr	Arg	Phe	Val
		115					120					125			
Lys	Asp	Arg	Arg	Pro	Ser	Ile	Ser	Pro	Asn	Phe	Asn	Phe	Leu	Gly	Gln
	130					135					140				
Leu	Leu	Glu	Tyr	Glu	Arg	Thr	Leu	Lys	Leu	Leu					
145					150					155					

<210> 7
 <211> 154
 <212> PRT
 <213> Homo sapiens

<400> 7															
Ser	Asp	Pro	Arg	Val	Pro	Ile	Tyr	Asp	Gln	Gly	Gly	Pro	Val	Glu	Ile
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Leu	Pro	Tyr	Leu	Tyr	Leu	Gly	Ser	Cys	Asn	His	Ser	Ser	Asp	Leu	Gln
			20					25					30		
Gly	Leu	Gln	Ala	Cys	Gly	Ile	Thr	Ala	Val	Leu	Asn	Val	Ser	Ala	Ser
		35					40					45			
Cys	Pro	Asn	His	Phe	Glu	Gly	Leu	Phe	His	Tyr	Lys	Ser	Ile	Pro	Val
	50					55					60				
Glu	Asp	Asn	Gln	Met	Val	Glu	Ile	Ser	Ala	Trp	Phe	Gln	Glu	Ala	Ile
65					70					75				80	
Ser	Phe	Ile	Asp	Ser	Val	Lys	Asn	Ser	Gly	Gly	Arg	Val	Leu	Val	His
			85					90					95		
Cys	Gln	Ala	Gly	Ile	Ser	Arg	Ser	Ala	Thr	Ile	Cys	Leu	Ala	Tyr	Leu
		100					105					110			
Ile	Gln	Ser	His	Arg	Val	Arg	Leu	Asp	Glu	Ala	Phe	Asp	Phe	Val	Lys
		115					120					125			

Gln Arg Arg Gly Val Ile Ser Pro Asn Phe Ser Phe Met Gly Gln Leu
 130 135 140
 Leu Gln Leu Glu Thr Gln Val Leu Cys His
 145 150

<210> 8
 <211> 154
 <212> PRT
 <213> Homo sapiens

<400> 8
 Ser Ser Cys Ser Thr Pro Leu Tyr Asp Gln Gly Gly Pro Val Glu Ile
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 Leu Pro Phe Leu Tyr Leu Gly Ser Ala Tyr His Ala Ser Arg Lys Asp
 20 25 30
 Met Leu Asp Ala Leu Gly Ile Thr Ala Leu Ile Asn Val Ser Ala Asn
 35 40 45
 Cys Pro Asn His Phe Glu Gly His Tyr Gln Tyr Lys Ser Ile Pro Val
 50 55 60
 Glu Asp Asn His Lys Ala Asp Ile Ser Ser Trp Phe Asn Glu Ala Ile
 65 70 75 80
 Asp Phe Ile Asp Ser Ile Lys Asn Ala Gly Gly Arg Val Phe Val His
 85 90 95
 Cys Gln Ala Gly Ile Ser Arg Ser Ala Thr Ile Cys Leu Ala Tyr Leu
 100 105 110
 Met Arg Thr Asn Arg Val Lys Leu Asp Glu Ala Phe Glu Phe Val Lys
 115 120 125
 Gln Arg Arg Ser Ile Ile Ser Pro Asn Phe Ser Phe Met Gly Gln Leu
 130 135 140
 Leu Gln Phe Glu Ser Gln Val Leu Ala Pro
 145 150

<210> 9
 <211> 154
 <212> PRT
 <213> Homo sapiens

<400> 9
 Ser Ser Cys Gly Thr Pro Leu His Asp Gln Gly Gly Pro Val Glu Ile
 1 5 10 15
 Leu Pro Phe Leu Tyr Leu Gly Ser Ala Tyr His Ala Ala Arg Arg Asp
 20 25 30
 Met Leu Asp Ala Leu Gly Ile Thr Ala Leu Leu Asn Val Ser Ser Asp
 35 40 45
 Cys Pro Asn His Phe Glu Gly His Tyr Gln Tyr Lys Cys Ile Pro Val
 50 55 60
 Glu Asp Asn His Lys Ala Asp Ile Ser Ser Trp Phe Met Glu Ala Ile
 65 70 75 80
 Glu Tyr Ile Asp Ala Val Lys Asp Cys Arg Gly Arg Val Leu Val His
 85 90 95
 Cys Gln Ala Gly Ile Ser Arg Ser Ala Thr Ile Cys Leu Ala Tyr Leu
 100 105 110
 Met Met Lys Lys Arg Val Arg Leu Glu Glu Ala Phe Glu Phe Val Lys
 115 120 125
 Gln Arg Arg Ser Ile Ile Ser Pro Asn Phe Ser Phe Met Gly Gln Leu

130 135 140
 Leu Gln Phe Glu Ser Gln Val Leu Ala Thr
 145 150

<210> 10
 <211> 154
 <212> PRT
 <213> Homo sapiens

<400> 10
 Asn Val Ser Tyr Arg Pro Ala Tyr Asp Gln Gly Gly Pro Val Glu Ile
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 Leu Pro Phe Leu Tyr Leu Gly Ser Ala Tyr His Ala Ser Lys Cys Glu
 20 25 30
 Phe Leu Ala Asn Leu His Ile Thr Ala Leu Leu Asn Val Ser Arg Arg
 35 40 45
 Thr Ser Glu Ala Cys Met Thr His Leu His Tyr Lys Trp Ile Pro Val
 50 55 60
 Glu Asp Ser His Thr Ala Asp Ile Ser Ser His Phe Gln Glu Ala Ile
 65 70 75 80
 Asp Phe Ile Asp Cys Val Arg Glu Lys Gly Gly Lys Val Leu Val His
 85 90 95
 Cys Glu Ala Gly Ile Ser Arg Ser Pro Thr Ile Cys Met Ala Tyr Leu
 100 105 110
 Met Lys Thr Lys Gln Phe Arg Leu Lys Glu Ala Phe Asp Tyr Ile Lys
 115 120 125
 Gln Arg Arg Ser Met Val Ser Pro Asn Phe Gly Phe Met Gly Gln Leu
 130 135 140
 Leu Gln Tyr Glu Ser Glu Ile Leu Pro Ser
 145 150

<210> 11
 <211> 163
 <212> PRT
 <213> Homo sapiens

<400> 11
 Asp Gly Ser Gly Cys Tyr Ser Leu Pro Ser Gln Pro Cys Asn Glu Val
 1 5 10 15
 Thr Pro Arg Ile Tyr Val Gly Asn Ala Ser Val Ala Gln Asp Ile Pro
 20 25 30
 Lys Leu Gln Lys Leu Gly Ile Thr His Val Leu Asn Ala Ala Glu Gly
 35 40 45
 Arg Ser Phe Met His Val Asn Thr Asn Ala Asn Phe Tyr Lys Asp Ser
 50 55 60
 Gly Ile Thr Tyr Leu Gly Ile Lys Ala Asn Asp Thr Gln Glu Phe Asn
 65 70 75 80
 Leu Ser Ala Tyr Phe Glu Arg Ala Ala Asp Phe Ile Asp Gln Ala Leu
 85 90 95
 Ala Gln Lys Asn Gly Arg Val Leu Val His Cys Arg Glu Gly Tyr Ser
 100 105 110
 Arg Ser Pro Thr Leu Val Ile Ala Tyr Leu Met Met Arg Gln Lys Met
 115 120 125
 Asp Val Lys Ser Ala Leu Ser Ile Val Arg Gln Asn Arg Glu Ile Gly
 130 135 140

Pro Asn Asp Gly Phe Leu Ala Gln Leu Cys Gln Leu Asn Asp Arg Leu
 145 150 155 160
 Ala Lys Glu

<210> 12
 <211> 140
 <212> PRT
 <213> Homo sapiens

<400> 12
 Met Glu Gly Thr Met Met Met Gln Gln Arg Pro Val Leu Ser Gln Gln
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 20 25 30
 Arg Glu Ile Asp Asn Phe Tyr Pro Glu Arg Phe Thr Tyr His Asn Val
 35 40 45
 Arg Leu Trp Asp Glu Glu Ser Ala Gln Leu Leu Pro His Trp Lys Glu
 50 55 60
 Thr His Arg Phe Ile Glu Ala Ala Arg Ala Gln Gly Thr His Val Leu
 65 70 75 80
 Val His Cys Lys Met Gly Val Ser Arg Ser Ala Ala Thr Val Leu Ala
 85 90 95
 Tyr Ala Met Lys Gln Tyr Glu Cys Ser Leu Glu Gln Ala Leu Arg His
 100 105 110
 Val Gln Glu Leu Arg Pro Ile Ala Arg Pro Asn Pro Gly Phe Leu Arg
 115 120 125
 Gln Leu Gln Ile Tyr Gln Gly Ile Leu Thr Ala Arg
 130 135 140

<210> 13
 <211> 737
 <212> PRT
 <213> Drosophila melanogaster

<400> 13
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 Thr Gln Ser Asn Asn Ser Asp Ile Gln Leu His Leu Gln Ser Met Phe
 20 25 30
 Tyr Leu Leu Gln Arg Glu Asp Thr Leu Lys Met Ala Val Lys Leu Glu
 35 40 45
 Ser Gln Arg Ser Asn Arg Thr Arg Tyr Leu Val Ile Ala Ser Arg Ser
 50 55 60
 Cys Cys Arg Ser Gly Thr Ser Asp Arg Arg Arg His Arg Ile Met Arg
 65 70 75 80
 His His Ser Val Lys Val Gly Gly Ser Ala Gly Thr Lys Ser Ser Thr
 85 90 95
 Ser Pro Ala Val Pro Thr Gln Arg Gln Leu Ser Val Glu Gln Thr Ala
 100 105 110
 Thr Glu Ala Ser Ser Lys Cys Asp Lys Thr Ala Asp Lys Glu Asn Ala
 115 120 125
 Thr Ala Ala Gly Asp Asn Lys Asn Thr Ser Gly Met Glu Glu Ser Cys
 130 135 140
 Leu Leu Gly Ile Asp Cys Asn Glu Arg Thr Thr Ile Gly Leu Val Val

145	Pro	Ile	Leu	Ala	Asp	Thr	Thr	Ile	His	Leu	Asp	Gly	Asp	Gly	Gly	Phe
					165					170						175
Ser	Val	Lys	Val	Tyr	Glu	Lys	Thr	His	Ile	Phe	Lys	Pro	Val	Ser	Val	
					180				185							190
Gln	Ala	Met	Trp	Ser	Ala	Leu	Gln	Thr	Leu	His	Lys	Val	Ser	Lys	Lys	
					195				200							205
Ala	Arg	Glu	Asn	Asn	Phe	Tyr	Ala	Ser	Gly	Pro	Ser	His	Asp	Trp	Leu	
					210				215							220
Ser	Ser	Tyr	Glu	Arg	Arg	Ile	Glu	Ser	Asp	Gln	Ser	Cys	Leu	Asn	Glu	
					225				230							235
Trp	Asn	Ala	Met	Asp	Ala	Leu	Glu	Ser	Arg	Arg	Pro	Pro	Ser	Pro	Asp	
					245				250							255
Ala	Ile	Arg	Asn	Lys	Pro	Pro	Glu	Lys	Glu	Glu	Thr	Glu	Ser	Val	Ile	
					260				265							270
Lys	Met	Lys	Leu	Lys	Ala	Ile	Met	Ser	Val	Asp	Leu	Asp	Glu	Val		
					275				280							285
Thr	Ser	Lys	Tyr	Ile	Arg	Gly	Arg	Leu	Glu	Glu	Ile	Leu	Asp	Met	Asp	
					290				295							300
Leu	Gly	Glu	Tyr	Lys	Ser	Phe	Ile	Asp	Ala	Glu	Met	Leu	Val	Ile	Leu	
					305				310							315
Gly	Gln	Met	Asp	Ala	Pro	Thr	Lys	Ile	Phe	Glu	His	Val	Tyr	Leu	Gly	
					325				330							335
Ser	Glu	Trp	Asn	Ala	Ser	Asn	Leu	Glu	Glu	Leu	Gln	Lys	Asn	Gly	Val	
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Arg	His	Ile	Leu	Asn	Val	Thr	Arg	Glu	Ile	Asp	Asn	Phe	Phe	Pro	Gly	
					355				360							365
Thr	Phe	Glu	Tyr	Phe	Asn	Val	Arg	Val	Tyr	Asp	Asp	Glu	Lys	Thr	Asn	
					370				375							380
Leu	Leu	Lys	Tyr	Trp	Asp	Asp	Thr	Phe	Arg	Tyr	Ile	Thr	Arg	Ala	Lys	
					385				390							400
Ala	Glu	Gly	Ser	Lys	Val	Leu	Val	His	Cys	Lys	Met	Gly	Val	Ser	Arg	
					405				410							415
Ser	Ala	Ser	Val	Val	Ile	Ala	Tyr	Ala	Met	Lys	Ala	Tyr	Gln	Trp	Glu	
					420				425							430
Phe	Gln	Gln	Ala	Leu	Glu	His	Val	Lys	Lys	Arg	Arg	Ser	Cys	Ile	Lys	
					435				440							445
Pro	Asn	Lys	Asn	Phe	Leu	Asn	Gln	Leu	Glu	Thr	Tyr	Ser	Gly	Met	Leu	
					450				455							460
Asp	Ala	Met	Lys	Asn	Lys	Glu	Lys	Leu	Gln	Arg	Ser	Lys	Ser	Glu	Thr	
					465				470							475
Asn	Leu	Lys	Ser	Thr	Lys	Asp	Ala	Arg	Leu	Leu	Pro	Gly	Ser	Glu	Pro	
					485				490							495
Thr	Pro	Leu	Ile	Gln	Ala	Leu	Asn	Gln	Ala	Lys	Ser	Lys	Ser	Thr	Gly	
					500				505							510
Glu	Ala	Gly	Val	Thr	Pro	Asp	Gly	Glu	Glu	Glu	Asp	Gly	Ser	Arg	Met	
					515				520							525
His	Arg	Arg	Ser	Ile	Ala	Gln	Lys	Ser	Gln	Arg	Arg	Met	Val	Arg	Arg	
					530				535							540
Ser	Ser	Ser	Thr	Ser	Pro	Lys	Thr	Gln	Thr	Ala	Val	Val	Thr	Lys	Gln	
					545				550							555
Gln	Ser	Gln	Ser	Met	Glu	Asn	Leu	Thr	Pro	Glu	Arg	Ser	Val	Ala	Glu	
					565				570							575
Glu	Pro	Lys	Asn	Met	Arg	Phe	Pro	Gly	Ser	Asn	Gly	Glu	Asn	Tyr	Ser	
					580				585							590
Val	Thr	Gln	Asn	Gln	Val	Leu	His	Ile	Gln	Lys	His	Thr	Pro	Leu	Ser	
					595				600							605

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Val Arg Thr Arg Ile His Asp Leu Glu Ala His Arg Ala Asp Gln Leu
610                               615                               620
Pro Gln Gln Pro Val Trp Thr Ser Leu Thr Lys Leu Ile Thr Gln Thr
625                               630                               635                               640
Ser His Leu Gly Lys Ser Val Ser Gly Ser Ser Ser Gly Asn Ile Asp
645                               650                               655
Ser Arg Arg Asp Ser Ser Cys Ser Asp Val Phe Ser Ser Gln Val Asp
660                               665                               670
Ser Val Phe Ala Lys Asp Glu Gly Glu Lys Arg Gln Arg Arg Lys Thr
675                               680                               685
His Ser Trp Thr Glu Ser Leu Gly Pro Ser Gly Gly Ile Val Leu Asp
690                               695                               700
Pro Thr Pro Gln Gln Gln Lys Gln Gln Ser Asn Ala Ile Leu Arg Pro
705                               710                               715                               720
Arg Gly Thr Arg Gln Arg Glu Leu Pro Ser Arg His Ala Ser Trp Gly
725                               730                               735
Ser

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<210> 14
<211> 509
<212> PRT
<213> Homo sapiens

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<400> 14

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Met Thr Leu Ser Thr Leu Ala Arg Lys Arg Lys Ala Pro Leu Ala Cys
1                               5                               10                               15
Thr Cys Ser Leu Gly Gly Pro Asp Met Ile Pro Tyr Phe Ser Ala Asn
20                               25                               30
Ala Val Ile Ser Gln Asn Ala Ile Asn Gln Leu Ile Ser Glu Ser Phe
35                               40                               45
Leu Thr Val Lys Gly Ala Ala Leu Phe Leu Pro Arg Gly Asn Gly Ser
50                               55                               60
Ser Thr Pro Arg Ile Ser His Arg Arg Asn Lys His Ala Gly Asp Leu
65                               70                               75                               80
Gln Gln His Leu Gln Ala Met Phe Ile Leu Leu Arg Pro Glu Asp Asn
85                               90                               95
Ile Arg Leu Ala Val Arg Leu Glu Ser Thr Tyr Gln Asn Arg Thr Arg
100                              105                              110
Tyr Met Val Val Val Ser Thr Asn Gly Arg Gln Asp Thr Glu Glu Ser
115                              120                              125
Ile Val Leu Gly Met Asp Phe Ser Ser Asn Asp Ser Ser Thr Cys Thr
130                              135                              140
Met Gly Leu Val Leu Pro Leu Trp Ser Asp Thr Leu Ile His Leu Asp
145                              150                              155                              160
Gly Asp Gly Gly Phe Ser Val Ser Thr Asp Asn Arg Val His Ile Phe
165                              170                              175
Lys Pro Val Ser Val Gln Ala Met Trp Ser Ala Leu Gln Ser Leu His
180                              185                              190
Lys Ala Cys Glu Val Ala Arg Ala His Asn Tyr Tyr Pro Gly Ser Leu
195                              200                              205
Phe Leu Thr Trp Val Ser Tyr Tyr Glu Ser His Ile Asn Ser Asp Gln
210                              215                              220
Ser Ser Val Asn Glu Trp Asn Ala Met Gln Asp Val Gln Ser His Arg
225                              230                              235                              240
Pro Asp Ser Pro Ala Leu Phe Thr Asp Ile Pro Thr Glu Arg Glu Arg

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Thr Glu Arg Leu Ile Lys Thr Lys Leu Arg Glu Ile Met Met Gln Lys
 245 250 255
 260 265 270
 Asp Leu Glu Asn Ile Thr Ser Lys Glu Ile Arg Thr Glu Leu Glu Met
 275 280 285
 Gln Met Val Cys Asn Leu Arg Glu Phe Lys Glu Phe Ile Asp Asn Glu
 290 295 300
 Met Ile Val Ile Leu Gly Gln Met Asp Ser Pro Thr Gln Ile Phe Glu
 305 310 315 320
 His Val Phe Leu Gly Ser Glu Trp Asn Ala Ser Asn Leu Glu Asp Leu
 325 330 335
 Gln Asn Arg Gly Val Arg Tyr Ile Leu Asn Val Thr Arg Glu Ile Asp
 340 345 350
 Asn Phe Phe Pro Gly Val Phe Glu Tyr His Asn Ile Arg Val Tyr Asp
 355 360 365
 Glu Glu Ala Thr Asp Leu Leu Ala Tyr Trp Asn Asp Thr Tyr Lys Phe
 370 375 380
 Ile Ser Lys Ala Lys Lys His Gly Ser Lys Cys Leu Val His Cys Lys
 385 390 395 400
 Met Gly Val Ser Arg Ser Ala Ser Thr Val Ile Ala Tyr Ala Met Lys
 405 410 415
 Glu Tyr Gly Trp Asn Leu Asp Arg Ala Tyr Asp Tyr Val Lys Glu Arg
 420 425 430
 Arg Thr Val Thr Lys Pro Asn Pro Ser Phe Met Arg Gln Leu Glu Glu
 435 440 445
 Tyr Gln Gly Ile Leu Leu Ala Ser Phe Leu Gly Leu Ile His Gly Gly
 450 455 460
 Arg Asp Lys Pro Trp Gly Glu Lys Ser Thr Glu Phe Glu Ser Val Asp
 465 470 475 480
 Leu Val Ser Ile Pro Gly Ser Pro Ser Cys Cys Asn Pro Glu Lys Leu
 485 490 495
 Leu His Ile Ser His Pro Tyr Leu Thr Pro Ser Ile Lys
 500 505

<210> 15
 <211> 552
 <212> PRT
 <213> Homo sapiens

<400> 15
 Met Val Leu Arg Leu Trp Ser Asp Thr Lys Ile His Leu Asp Gly Asp
 1 5 10 15
 Gly Gly Phe Ser Val Ser Thr Ala Gly Arg Met His Ile Phe Lys Pro
 20 25 30
 Val Ser Val Gln Ala Met Trp Ser Ala Leu Gln Val Leu His Lys Ala
 35 40 45
 Cys Glu Val Ala Arg Arg His Asn Tyr Phe Pro Gly Gly Val Ala Leu
 50 55 60
 Ile Trp Ala Thr Tyr Tyr Glu Ser Cys Ile Ser Ser Glu Gln Ser Cys
 65 70 75 80
 Ile Asn Glu Trp Asn Ala Met Gln Asp Leu Glu Ser Thr Arg Pro Asp
 85 90 95
 Ser Pro Ala Leu Phe Val Asp Lys Pro Thr Glu Gly Glu Arg Thr Glu
 100 105 110
 Arg Leu Ile Lys Ala Lys Leu Arg Ser Ile Met Met Ser Gln Asp Leu
 115 120 125

Glu	Asn	Val	Thr	Ser	Lys	Glu	Ile	Arg	Asn	Glu	Leu	Glu	Lys	Gln	Met
130						135				140					
Asn	Cys	Asn	Leu	Lys	Glu	Leu	Lys	Glu	Phe	Ile	Asp	Asn	Glu	Met	Leu
145					150				155						160
Leu	Ile	Leu	Gly	Gln	Met	Asp	Lys	Pro	Ser	Leu	Ile	Phe	Asp	His	Leu
				165					170					175	
Tyr	Leu	Gly	Ser	Glu	Trp	Asn	Ala	Ser	Asn	Leu	Glu	Glu	Leu	Gln	Gly
			180					185					190		
Ser	Gly	Val	Asp	Tyr	Ile	Leu	Asn	Val	Thr	Arg	Glu	Ile	Asp	Asn	Phe
		195					200					205			
Phe	Pro	Gly	Leu	Phe	Ala	Tyr	His	Asn	Ile	Arg	Val	Tyr	Asp	Glu	Glu
	210					215					220				
Thr	Thr	Asp	Leu	Leu	Ala	His	Trp	Asn	Glu	Ala	Tyr	His	Phe	Ile	Asn
225					230					235					240
Lys	Ala	Lys	Arg	Asn	His	Ser	Lys	Cys	Leu	Val	His	Cys	Lys	Met	Gly
				245					250					255	
Val	Ser	Arg	Ser	Ala	Ser	Thr	Val	Ile	Ala	Tyr	Ala	Met	Lys	Glu	Phe
			260					265					270		
Gly	Trp	Pro	Leu	Glu	Lys	Ala	Tyr	Asn	Tyr	Val	Lys	Gln	Lys	Arg	Ser
		275					280					285			
Ile	Thr	Arg	Pro	Asn	Ala	Gly	Phe	Met	Arg	Gln	Leu	Ser	Glu	Tyr	Glu
	290					295					300				
Gly	Ile	Leu	Asp	Ala	Ser	Lys	Gln	Arg	His	Asn	Lys	Leu	Trp	Arg	Gln
305					310					315					320
Gln	Thr	Asp	Ser	Ser	Leu	Gln	Gln	Pro	Val	Asp	Asp	Pro	Ala	Gly	Pro
				325					330					335	
Gly	Asp	Phe	Leu	Pro	Glu	Thr	Pro	Asp	Gly	Thr	Pro	Glu	Ser	Gln	Leu
			340					345					350		
Pro	Phe	Leu	Asp	Asp	Ala	Ala	Gln	Pro	Gly	Leu	Gly	Pro	Pro	Leu	Pro
		355					360					365			
Cys	Cys	Phe	Arg	Arg	Leu	Ser	Asp	Pro	Leu	Leu	Pro	Ser	Pro	Glu	Asp
	370					375					380				
Glu	Thr	Gly	Ser	Leu	Val	His	Leu	Glu	Asp	Pro	Glu	Arg	Glu	Ala	Leu
385				390						395					400
Leu	Glu	Glu	Ala	Ala	Pro	Pro	Ala	Glu	Val	His	Arg	Pro	Ala	Arg	Gln
				405					410					415	
Pro	Gln	Gln	Gly	Ser	Gly	Leu	Cys	Glu	Lys	Asp	Val	Lys	Lys	Lys	Leu
			420					425					430		
Glu	Phe	Gly	Ser	Pro	Lys	Gly	Arg	Ser	Gly	Ser	Leu	Leu	Gln	Val	Glu
		435					440					445			
Glu	Thr	Glu	Arg	Glu	Glu	Gly	Leu	Gly	Ala	Gly	Arg	Trp	Gly	Gln	Leu
	450					455					460				
Pro	Thr	Gln	Leu	Asp	Gln	Asn	Leu	Leu	Asn	Ser	Glu	Asn	Leu	Asn	Asn
465					470					475					480
Asn	Ser	Lys	Arg	Ser	Cys	Pro	Asn	Gly	Met	Glu	Val	Gly	Arg	Ala	Arg
				485					490					495	
Pro	Ala	Gly	Trp	His	Thr	Pro	Ser	Leu	Pro	Ser	His	Ser	Asn	Trp	Pro
			500					505					510		
Thr	Ser	Ala	Ser	Val	Val	Gly	Thr	Gly	Thr	Arg	His	His	Thr	Gln	
		515					520					525			
Leu	Ile	Phe	Phe	Tyr	Cys	Leu	Leu	Trp	Ala	Pro	Ser	Ser	His	Leu	Gln
	530					535					540				
Gly	Pro	Glu	Gly	Ser	Phe	Thr	Gly								
545					550										

<211> 10
 <212> PRT
 <213> Homo sapiens

<400> 16
 Val His Cys Lys Met Gly Val Ser Arg Ser
 1 5 10

<210> 17
 <211> 24
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Conserved homology region from eight DSPs having
 MAP-kinase phosphatase activity

<400> 17
 Asn Gly Arg Val Leu Val His Cys Gln Ala Gly Ile Ser Arg Ser Gly
 1 5 10 15
 Thr Asn Ile Leu Ala Tyr Leu Met
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<210> 18
 <211> 22
 <212> PRT
 <213> Homo sapiens

<400> 18
 Val Leu Val His Cys Lys Met Gly Val Ser Arg Ser Ala Ala Thr Val
 1 5 10 15
 Leu Ala Tyr Ala Met Lys
 20

<210> 19
 <211> 30
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 19
 tgtc gatgaa gtcacggtac tgctggaggg 30

<210> 20
 <211> 1416
 <212> DNA
 <213> Mus musculus

<400> 20
 atggccctgg tcacagtgg ccgttcgccc ccgggcagcg gcgcctccac gcccgtaggg 60
 ccctgggacc aggcgggtcca gcgaaggagt cgactccagc gaaggcagag ctttgcggtg 120
 ctccgtgggg ctgtcctggg actgcaggat ggaggggaca atgatgatgc agcagaggcc 180

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agttctgagc caacagagaa ggccccgagt gaggaggagc tccacgggga ccagacagac 240
ttcgggcaag gatcccagag tccccagaag caggaggagc agaggcagca cctgcacctc 300
atggtacagc tgctgaggcc gcaggatgac atccgcctgg cagcccagct ggaggcaccc 360
cggcctcccc ggctccgcta cctgctggta gtttctacac gagaaggaga aggtctgagc 420
caggatgaga cggctcctct gggcgtggat ttccctgaca gcagctcccc cagctgcacc 480
ctgggcctgg tcttgcccct ctggagtgc acccaggtgt acttagatgg agacgggggc 540
ttcagcgtga cgtctggtag gcaaagccgg atcttcaagc ccatctccat ccagaccatg 600
tgggccacac tccaggtatt gcaccaagca tgtgaggcag ctctaggcag cggccttgta 660
ccgggtggca gtgcctcac ctgggccagc cactaccagg agagactgaa ctccgaacag 720
agctgcctca atgagtggac ggctatggcc gacctggagt ctctgcggcc tcccagcgcc 780
gagcctggcg ggtcctcaga acaggagcag atggagcagg cgatccgtgc tgagctgtgg 840
aaagtgttgg atgtcagtga cctggagagt gtcacttcca aagagatccg ccaggctctg 900
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atggcccggg agattgacaa cttctaccct gagcgcttca cctaccacaa tgtgcgcctc 1140
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gctgaagag cacagggcac ccacgtgctg gtccactgca agatgggcgt cagccgctca 1260
gcgccacag tgctggccta tgccatgaag cagtacgaat gcagcctgga gcaggccctg 1320
cgccacgtgc aggagctccg gcccatcgcc cgccccaacc ctggcttctt gcgccagctg 1380
cagatctacc agggcatcct gacggccaga acctga 1416

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<210> 21
 <211> 471
 <212> PRT
 <213> Mus musculus

<400> 21

Met	Ala	Leu	Val	Thr	Val	Ser	Arg	Ser	Pro	Pro	Gly	Ser	Gly	Ala	Ser
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Thr	Pro	Val	Gly	Pro	Trp	Asp	Gln	Ala	Val	Gln	Arg	Arg	Ser	Arg	Leu
			20					25					30		
Gln	Arg	Arg	Gln	Ser	Phe	Ala	Val	Leu	Arg	Gly	Ala	Val	Leu	Gly	Leu
			35				40					45			
Gln	Asp	Gly	Gly	Asp	Asn	Asp	Asp	Ala	Ala	Glu	Ala	Ser	Ser	Glu	Pro
	50				55					60					
Thr	Glu	Lys	Ala	Pro	Ser	Glu	Glu	Glu	Leu	His	Gly	Asp	Gln	Thr	Asp
65					70				75					80	
Phe	Gly	Gln	Gly	Ser	Gln	Ser	Pro	Gln	Lys	Gln	Glu	Glu	Gln	Arg	Gln
				85				90						95	
His	Leu	His	Leu	Met	Val	Gln	Leu	Leu	Arg	Pro	Gln	Asp	Asp	Ile	Arg
			100				105						110		
Leu	Ala	Ala	Gln	Leu	Glu	Ala	Pro	Arg	Pro	Pro	Arg	Leu	Arg	Tyr	Leu
			115				120					125			
Leu	Val	Val	Ser	Thr	Arg	Glu	Gly	Glu	Gly	Leu	Ser	Gln	Asp	Glu	Thr
						135					140				
Val	Leu	Leu	Gly	Val	Asp	Phe	Pro	Asp	Ser	Ser	Ser	Pro	Ser	Cys	Thr
145					150				155						160
Leu	Gly	Leu	Val	Leu	Pro	Leu	Trp	Ser	Asp	Thr	Gln	Val	Tyr	Leu	Asp
				165				170						175	
Gly	Asp	Gly	Gly	Phe	Ser	Val	Thr	Ser	Gly	Gly	Gln	Ser	Arg	Ile	Phe
			180					185					190		
Lys	Pro	Ile	Ser	Ile	Gln	Thr	Met	Trp	Ala	Thr	Leu	Gln	Val	Leu	His
			195				200						205		
Gln	Ala	Cys	Glu	Ala	Ala	Leu	Gly	Ser	Gly	Leu	Val	Pro	Gly	Gly	Ser
			210			215					220				
Ala	Leu	Thr	Trp	Ala	Ser	His	Tyr	Gln	Glu	Arg	Leu	Asn	Ser	Glu	Gln

225		230		235		240
Ser Cys Leu Asn Glu Trp Thr Ala Met Ala Asp Leu Glu Ser Leu Arg						
	245		250		255	
Pro Pro Ser Ala Glu Pro Gly Gly Ser Ser Glu Gln Glu Gln Met Glu						
	260		265		270	
Gln Ala Ile Arg Ala Glu Leu Trp Lys Val Leu Asp Val Ser Asp Leu						
	275		280		285	
Glu Ser Val Thr Ser Lys Glu Ile Arg Gln Ala Leu Glu Leu Arg Leu						
	290		295		300	
Gly Leu Pro Leu Gln Gln Tyr Arg Asp Phe Ile Asp Asn Gln Met Leu						
	305		310		315	
Leu Leu Val Ala Gln Arg Asp Arg Ala Ser Arg Ile Phe Pro His Leu						
	325		330		335	
Tyr Leu Gly Ser Glu Trp Asn Ala Ala Asn Leu Glu Glu Leu Gln Arg						
	340		345		350	
Asn Arg Val Thr His Ile Leu Asn Met Ala Arg Glu Ile Asp Asn Phe						
	355		360		365	
Tyr Pro Glu Arg Phe Thr Tyr His Asn Val Arg Leu Trp Asp Glu Glu						
	370		375		380	
Ser Ala Gln Leu Leu Pro His Trp Lys Glu Thr His Arg Phe Ile Glu						
	385		390		395	
Ala Ala Arg Ala Gln Gly Thr His Val Leu Val His Cys Lys Met Gly						
	405		410		415	
Val Ser Arg Ser Ala Ala Thr Val Leu Ala Tyr Ala Met Lys Gln Tyr						
	420		425		430	
Glu Cys Ser Leu Glu Gln Ala Leu Arg His Val Gln Glu Leu Arg Pro						
	435		440		445	
Ile Ala Arg Pro Asn Pro Gly Phe Leu Arg Gln Leu Gln Ile Tyr Gln						
	450		455		460	
Gly Ile Leu Thr Ala Arg Thr						
	465		470			

<210> 22
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 22
 gccgcactgg aaggagacgc accg

24

<210> 23
 <211> 27
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 23
 gcgccagctg cagatctacc agggcat

27

<210> 24
 <211> 28

<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 24
cactttccac agctcagcac ggatcgcc

28

<210> 25
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 25
cgcagagact ccaggtcggc catagcc

27

<210> 26
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 26
gggggttgagg gaaggggccg tgc

23

<210> 27
<211> 6
<212> PRT
<213> Homo sapiens

<400> 27
Asp Ala Asp Glu Tyr Leu
1 5